

New and little-known species of dance flies the subgenus *Euempis* Frey (Diptera: Empididae) from Morocco and Spain

Новые и малоизвестные виды мух-толкунчиков подрода *Euempis* Frey (Diptera: Empididae) из Марокко и Испании

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KEY WORDS. Diptera, Empididae, *Empis*, new species, Morocco, Spain.

КЛЮЧЕВЫЕ СЛОВА. Diptera, Empididae, *Empis*, новый вид, Марокко, Испания.

ABSTRACT. A new species of the subgenus *Euempis* Frey, 1953 of the genus *Empis* Linnaeus, 1758 (Diptera: Empididae) is described from Morocco (Azrou/Ifrane area): *Empis* (*Euempis*) *azrouensis* sp.n. The subgenus is recorded from Morocco for the first time. In addition, *Empis* (*Euempis*) *mikii* Strobl, 1899 and *E. (E.) pilicornis* Loew, 1867 known only from Spain are discussed. *Empis* (*Euempis*) *pilicornis* remains known after the holotype only, its redescription is provided.

РЕЗЮМЕ. Описан новый вид подрода *Euempis* Frey, 1953 рода *Empis* Linnaeus, 1758 (Diptera: Empididae) из Марокко (район Azrou/Ifrane): *Empis* (*Euempis*) *azrouensis* sp.n. Подрод впервые указывается для Марокко. Кроме того, обсуждаются *Empis* (*Euempis*) *mikii* Strobl, 1899 и *E. (E.) pilicornis* Loew, 1867, известные только из Испании. *Empis* (*Euempis*) *pilicornis* описывается известным только по голотипу, дано его переписание.

Introduction

The subgenus *Euempis* Frey, 1953 (with *Empis tessellata* Fabricius, 1794 as type species) of the genus *Empis* Linnaeus, 1758 currently includes 22 described species, the majority of which are known from the western part of the Palaearctic [Shamshev, 2001, 2016; Shamshev, Kustov, 2018; Barták, Kokan, 2021]. The group is especially diverse in the montane and submontane areas of the Mediterranean region. In our paper, we describe a new species of *Euempis* from Morocco. In addition, two little-known species known only from Spain are discussed.

Material and Methods

This study is based on material borrowed from or deposited in the following institutions: Natural History Museum of Denmark, University of Copenhagen, Denmark (NHMD); Oxford University Museum of Natural History, Oxford, UK (OUMNH); Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität zu Berlin, Berlin, Germany (ZMHB). The photographs were taken using a Canon EOS 11 40D camera using a Canon MP-E 65 mm objective, with multiple layers combined using the Helicon Focus 5.3.14 software. To facilitate observations, the terminalia were macerated in cold 10% KOH, then immersed for a short period in 85% lactic acid and viewed in glycerine. Additional information to label data is included in square [] brackets. The repository of each type is given in parentheses.

Taxonomic account

Class Insecta Linnaeus, 1758
Order Diptera Linnaeus, 1758
Suborder Brachycera Macquart, 1834
Superfamily Empidoidea Latreille, 1804
Family Empididae Latreille, 1804
Genus *Empis* Linnaeus, 1758

Empis (*Euempis*) *azrouensis* Shamshev, sp.n.
Figs 1–2.

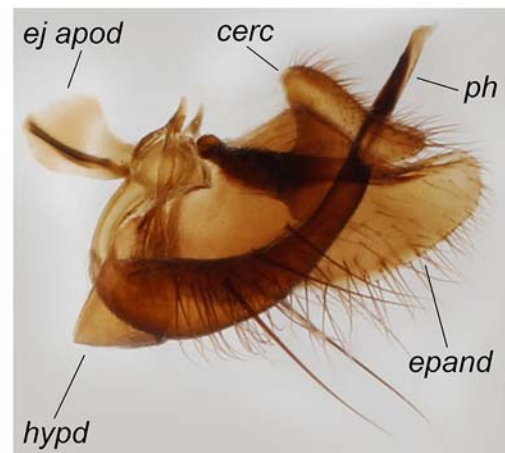
TYPE MATERIAL. Holotype, ♂, Morocco 1400–2000 m, Azrou/Ifrane area, 17–19.iv.1989, Zool. Muz. Copenh. Exp. (ZMUC). Paratype. 1 ♂, same data as holotype (ZMUC).

DIAGNOSIS. Rather small species (body about 4.5 mm) with densely greyish pruinose, black setose thorax and abdomen; palpus black; postpronotal seta indistinct, acrostichal and dorsocentral setae multiserial; halter yellow; male abdominal segments unmodified, epandrial lamella with three very long strong setae closer to base.

DESCRIPTION. Male (Fig. 1). Body length 4.3 mm; wing length 4.6 mm (holotype). Head with greyish pruinescence on face, frons, postgena, ocellar triangle, occiput and clypeus (except shiny margins); black setose. Holoptic; upper ommatidia enlarged. Frons represented by very small triangular space just below ocellar triangle and larger space above antennae; bare. Face broad, parallel-sided, bare. Ocellar triangle with several moderately long fine setae (in holotype 2 setae slightly longer). Occiput covered with numerous, long, fine setae (including postoculars); postgena with numerous hair-like setae. Antenna black; scape short, slightly longer than pedicel, both mostly with short setulae (scape with some longer setulae dorsally); postpedicel conical, with lower margin somewhat concave on apical part, nearly 3X longer than wide; stylus rather short, about 2.5X shorter than postpedicel. Palpus black; with scattered short and moderate-

ly long fine setae. Proboscis with labrum mainly reddish-brown, brownish apically, about 1.5X longer than head height.

Thorax dark in ground-colour, densely greyish pruinose (somewhat affected by humidity), black setose; scutum with indistinct brownish grey vittae along rows of acrostichal and dorsocentral setae. Proepisternum with tuft of numerous long fine setae on lower section and several similar setae in front of spiracle. Prosternum setose. Anteprepronotum with about 10 strong long setae dorsally and 2–3 fine setae laterally. Postpronotal lobe with 1 hardly distinguishable stronger and numerous fine setae. Scutum with well differentiated main setae, entire supra-alar space between postpronotal lobe and suture covered with short fine setae, some similar setae present just after suture and on anterior part of notopleuron; acrostichals irregularly multiserial (4–5 rows), short, fine, numerous, lacking on prescutellar depression; presutural dorsocentrals similar to acrostichals, multiserial, not separated from supra-alar setae, postsutural dorsocentrals less numerous, becoming uniserial and long along prescutellar depression (2–3 prescutellars longest); 1 long presutural supra-alar, 1 longer postsutural supra-alar (with some additional fine setae anteriorly), 1 long and 1 very short postalar; 4 sub-



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Figs 1–2. *Empis (Euempis) azrouensis* sp.n., male: 1 — habitus, holotype, lateral view; 2 — hypopygium, lateral view. Abbreviations: cerc — cercus; ej apod — ejaculatory apodeme; epand — epandrium; hypd — hypandrium; ph — phallus.

Рис. 1, 2. *Empis (Euempis) azrouensis* sp.n., самец: 1 — габитус, голотип, вид сбоку; 2 — гипопигий, вид сбоку. Сокращения: cerc — церк; ej apod — эякуляторная аподема; epand — эпандрий; hypd — гипандрий; ph — фаллус.

equally long scutellars (in holotype 1 additional fine seta present); 4 notopleurals. Laterotergite with numerous long (mostly anteriorly) and short (mostly posteriorly) setae. Anterior and posterior spiracles yellow.

Legs long, slender, black setose. Legs colour: coxae and trochanters concolorous with mesopleuron; femora brownish, somewhat yellow translucent near extreme apex and base; fore and mid tibiae yellowish, hind tibia brownish yellow, tarsomeres 1–2 mostly yellowish (somewhat darkened on extreme apex), tarsomeres 3–5 becoming gradually darker from tarsomere 3 to tarsomere 5. Coxae and trochanters with simple setae. Fore femur with complete rows of fine anteroventral and posteroventral setae (former longer toward base, latter longer toward apex), some short fine ventral setae on basal half, stronger setae on about apical half anteriorly and posteriorly. Fore tibia with numerous moderately long anterodorsal and posterodorsal setae. Fore basitarsus slender, with some short setae dorsally; tarsomere 4 slightly shorter than tarsomere 5. Mid femur with short fine setae anteroventrally and ventrally (somewhat longer near base), complete row of moderately long and mostly fine posteroventral setae (2–3 strong setae on about middle). Mid tibia with 4 moderately long anterodorsal, 2 longer posterodorsal on basal half, 2 anteroventral on about apical half and 2 posteroventral setae (besides cirlet of moderately long subapicals). Mid basitarsus with 4 short, spine-like setae ventrally. Hind femur slender; with long strong setae anterodorsally; complete rows of short to moderate long, mostly fine anteroventral and posteroventral setae (anteroventrals somewhat stronger on about apical half); covered with setulae ventrally, some long fine setae posteriorly. Hind tibia slightly thickened; with rows of strong 6–7 anterodorsal and 6–7 posterodorsal setae, 1 similar anteroventral seta on apical half; 1 long strong seta in posteroapical comb. Hind basitarsus slender; with 3 setae of different lengths dorsally, several short spine-like setae ventrally.

Wing membrane faintly infusate; veins brownish; CuA+CuP (anal vein) complete, distinct throughout; cell dm short, with elongate apex. Pterostigma brownish. Basal costal seta present, long. Anal lobe well-developed; axillary angle very acute. Squama yellow, black fringed. Halter yellow.

Abdomen black, almost uniformly densely grey pruinose, only posterior margin of tergites somewhat paler; black setose; tergites with short setae dorsally and long laterally (including longer and stronger postermarginals); sternite 1 bare, remaining sternites with scattered fine setae (except noted). Pregenital segments unmodified; segment 8 with separated tergite and sternite; tergite 8 moderately long, entire, subrectangular viewed dorsally; sternite 8 nearly as long as tergite 7, entire, with long posteromarginal setae.

Terminalia (Fig. 2) moderately large, cerci concolorous with abdomen, epandrium slightly paler, both greyish pruinose and black setose. Cerci separated with each other and from hypandrium; cercus small, unilobate, subtriangular (lateral view), shorter than epandrial lamella, with slightly concave upper margin, lower margin produced downwards to phallus, with short fine setae along upper margin and some setulae on inner surface. Hypoproct simple, bare. Epandrium entirely broadly divided (epandrial bridge absent); epandrial lamella subtriangular (lateral view), with numerous fine setae along lower margin, 3 long, strong setae closer to base. Hypandrium brown, subshiny, bare; separated from hypandrium, well sclerotised, entire, moderately large, truncate apically (ventral view); gonocoxal apodeme small. Phallus brown, mostly hidden but slender apical portion extended quite far beyond cerci; gently curved, strongly thickened just beyond basal curvature, becoming gradually narrower toward middle and uniformly slender

on remaining part, pointed at tip (lateral view); ejaculatory apodeme moderately large, extended far beyond basal curvature of phallus, with lateral wings.

Female. Unknown.

REMARKS. The new species is similar to *Empis mirandica* Chvála, 1981 known from Spain [Chvála, 1981]. However, *E. azrouensis* sp.n. is smaller (body length 4.3 mm versus 7.4 mm in *E. mirandica*), has entirely black palpus (versus palpus with large apical portion yellow in *E. mirandica*) and longer phallus extended quite far beyond cerci (versus concealed within epandrial lamellae in *E. mirandica*). In addition, the new species differs from *E. mirandica* by presence of a presutural supra-alar seta, fine ventral setae on the mid and hind femora (versus two rows of spine-like setae ventrally) and by only 1 anteroventral seta on the hind tibia (versus 2 rows of strong setae ventrally).

Also, the new species resembles *E. dasycera* (Collin, 1960), *E. picipes* Meigen, 1804 and *E. pleurica* (Collin, 1960). However, it differs from these species primarily by unmodified structure and vestiture of abdominal tergites of the male. In the male of *E. picipes* (distributed mostly in temperate central regions of Europe, also Greece and Italy, north-western part of the European Russia) and *E. dasycera* (Jordan, Israel, Turkey), posterior lateral corner of abdominal tergite 4 is produced and bears some strong setae [Collin, 1960: 402, fig. 3; 1961: 509, fig. 187; Chvála, 1994: 28, fig. 19]. In the male of *E. pleurica* (Croatia, Iran, Israel, Russia (North Caucasus), Turkey), abdominal tergite 4 is not produced posterolaterally but, like two previous species, it bears 3–4 spine-like setae [Collin, 1960: 401, fig. 2A]; in addition, tergite 4 with more or less distinct shiny patch on each side and tergite 5 is shiny black and convex laterally.

Empis azrouensis sp.n. is the first species of the subgenus *Euempis* recorded from Morocco.

ETYMOLOGY. The name of the new species refers to its type locality.

DISTRIBUTION. Known only from Morocco.

Empis (Euempis) mikii Strobl, 1899

Fig. 3.

Empis mikii Strobl, 1899: 15. Type-localities: Algeciras, Cardenas (Spain).

MATERIAL EXAMINED. 1 ♂, Spain, Granada, Sierra Nevada near Padul, 1300 m, 1.v.1966, L. Lyneborg (OUMNH).

REMARKS. The specimen indicated above was identified by M. Chvála, who has recorded *E. mikii* from Spain and published a figure of the male genitalia [Chvála, 1981: 117, fig. 2]. We provide a photo of the habitus of this interesting species for the first time. *Empis mikii* resembles externally the species of the *E. tessellata* group, however, based on the male genitalia it belongs to the *E. ciliata* group.

DISTRIBUTION. Palaearctic: Spain.

Empis (Euempis) pilicornis Loew, 1867

Fig. 4.

Empis pilicornis Loew, 1867: 8. Type-locality: Spain, Andalusia. **TYPE MATERIAL EXAMINED.** Holotype, ♂, labels data as in Fig. 4 (ZMHB).

Loew described this species after a single male taken in "Hispania". There is one male under the name *E. pilicornis* in the Loew Collection in Berlin.

DIAGNOSIS. Large, black species (body length about 9 mm); antennal scape elongate; palpus black; acrostichal and dorsocentral setae multiserial; hind tibia with 2 long anteroventral setae; halter brown; abdominal sternite 1 setose. Male: epandrial lamella subtriangular; phallus slender, con-



Fig. 3. *Empis (Euempis) mikii* Strobl, 1899, male, lateral view.

Рис. 3. *Empis (Euempis) mikii* Strobl, 1899, самец, вид сбоку.

cealed within epandrial lamellae.

RE-DESCRIPTION. Male (Fig. 4). Body length 9.3 mm; wing length 9 mm. Eyes almost touching on frons leaving small triangular space below ocellar tubercle and large triangular space above antennae; ommatidia slightly larger on upper part; frons bare. Antennae missing (Loew notes that the scape is elongate, thick and covered with numerous, long, hair-like setae; the pedicel is rounded, with longer setae than in *E. ciliata* Fabricius). Occiput covered with dense, long, black to brownish, thin setae. Face broad, greyish pruinose. Palpus long, black; with numerous long, black, thin setae. Labrum brownish to yellowish brown, nearly 1.5 times longer than head height.

Thorax black, with black setation; densely greyish pruinose; scutum almost uniformly greyish, very slightly darker along rows of acrostichal and dorsocentral setae in some view. Prothoracic sclerites with numerous long thin setae; additionally, postpronotal lobe with 1 somewhat stronger seta. Scutum with dorsocentral and acrostichal setae hair-like, moderately long (except several prescutellar dorsocentrals), multiserial; acrostichal setae dense, not forming rows, present on prescutellar depression; dorsocentral setae separated from acrostichals by narrow space but not separated from similar setae covering supra-alar face; 2 presutural

supra-alars (anterior seta shorter and thinner), 2 postsutural supra-alars (posterior seta much longer), 1 very long postalar, scutellum probably with 2 stronger and longer setae (both missing), 2 shorter and thinner setae and several short setulae, 6 notopleurals. Laterotergite with long, numerous setae.

Legs blackish brown, greyish pruinose, denser on coxae and trochanters; with black setation. Coxae and trochanters with numerous simple setae. Fore femur with rows of numerous anteroventral and posteroventral thin setae (becoming longer toward base), several long setae anteriorly and posteriorly on apical part. Fore tibia with rows of 7–8 moderately long anterodorsal, 7–8 posterodorsal and 4 similar posteroventral setae (besides circlet of subapical setae), pubescent ventrally. Fore basitarsus slender, with 2 short anterodorsal and 2 short posteroventral setae on basal part; all fore tarsomeres with circlet of strong subapical setae. Mid femur with irregular rows of anteroventral and posteroventral intermixed stronger and thin setae becoming longer toward base, 2 strong setae closer to apex anteriorly, 1 subapical anterior and 1 subapical posterior setae. Mid tibia with 4 irregularly set anterodorsal, 4 posterodorsal, 4 anteroventral and 4 posteroventral setae (besides circlet of subapical setae). Mid basitarsus with 1 anteroventral and 1 posteroventral setae on

about middle; all mid tarsomeres with circlet of strong subapical setae. Hind femur slender, only about 1.5 times wide than hind tibia; covered with numerous long strong setae; with dense, long, thinner setae posteroventrally and posteriorly. Hind tibia rather slightly uniformly thickened, somewhat broader than fore and mid tibiae; with 5 long anterodorsal, 4 shorter posterodorsal, 1 dorsal near base and 2 long anteroventral setae on about apical half (besides circlet of subapical setae); 1 short fine seta in posteroapical comb. Hind basitarsus slender, with 1 short anteroventral and 3 posteroventral setae on about apical half. Pulvilli and claws large.

Wing (right wing missing) membrane slightly uniformly brownish, cell r1 darker; with typical venation for *Euempis*; veins brownish yellow, costa brownish; R_{2+3} forked just before meeting costa; pterostigma indistinct. Squama brown, black fringed. Halter brown.

Abdomen black, rather subshiny, faintly greyish pruinose; tergites 1–6 viewed posteriorly with pale posterior margin, bearing long posteromarginal setae laterally; sternite 1 setose, sternite 8 with several long posteromarginal setae.

Terminalia (not dissected) small, black; epandrial lamella subtriangular, with row of several black setae closer to lower margin; cercus small, subtriangular (lateral view), pointed, with minute setae.

Female. Unknown.

REMARKS. This little-known species of *Euempis* resembles very much widely distributed *E. sericans* Brullé, 1832 (recorded from Europe (except north), Georgia, Russia (North Caucasus), Turkey). *Empis pilicornis* can be readily distinguished from *E. sericans* primarily by subtriangular epandrial lamella (versus subrectangular in *E. sericans* [e.g., Chvála, 1994: 26, fig. 17]) as well as by brown spiracles and halteres (versus yellow in *E. sericans*).

DISTRIBUTION. Palaeartic: Spain. The species remains known only after the holotype collected from Andalusia.

Acknowledgements. I am indebted to Thomas Pape (NHMD), Adrian Pont (OUMNH) and Joachim Ziegler (ZMHB) for the loan of specimens used in this study. This study was performed within the frames of the Russian State Research Project no. 122031100272-3 of the Ministry of Science and Higher Education of the Russian Federation.

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Fig. 4. *Empis (Euempis) pilicornis* Loew, 1867, holotype male, lateral view.

Рис. 4. *Empis (Euempis) pilicornis* Loew, 1867, голотип, самец, вид сбоку.

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